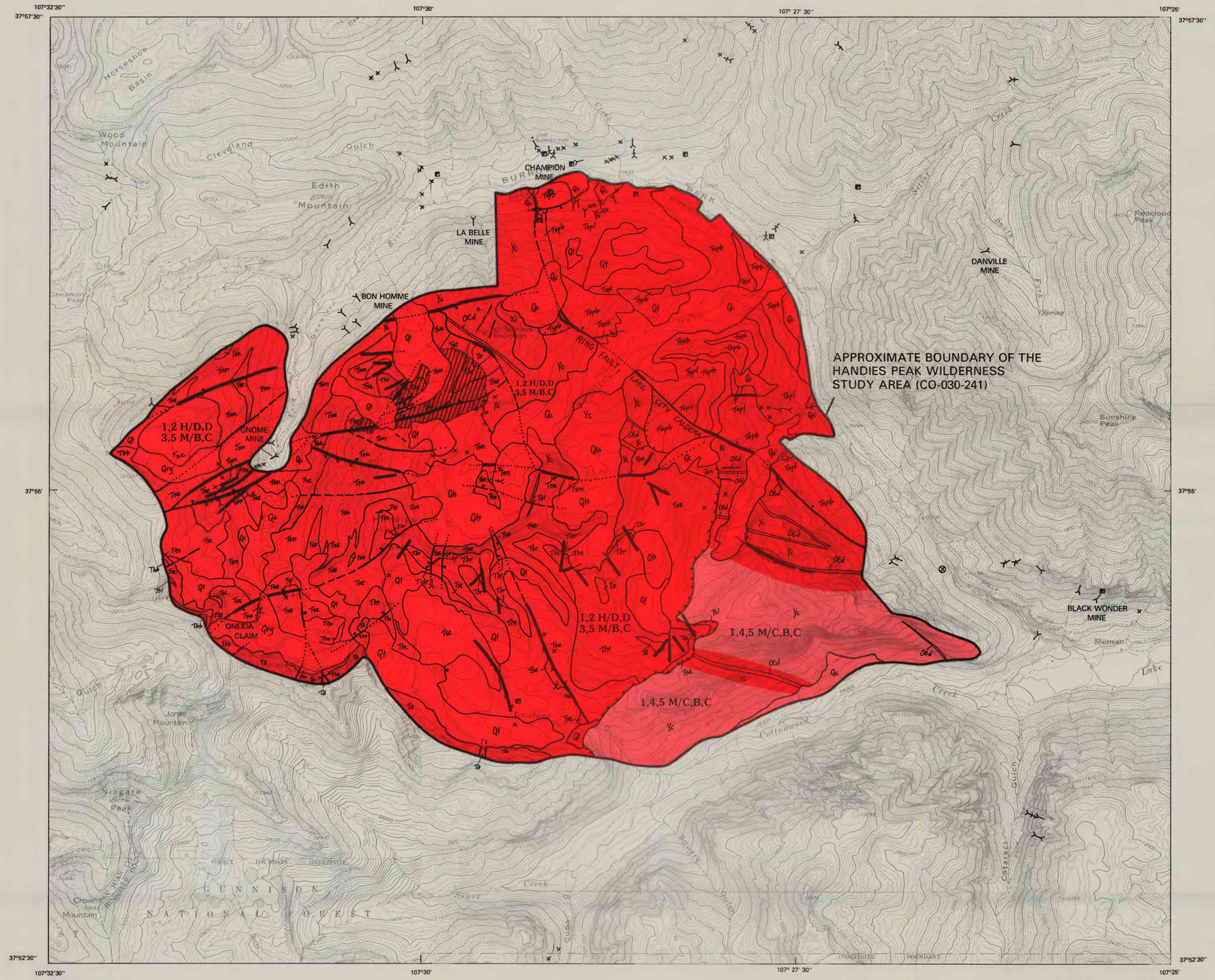
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

BULLETIN 1715-B
PLATE 2



Base from U.S. Geological Survey
Handies Peak, 1955; Redcloud Peak, 1964

Geology from Lipman (1976a) and Hon (1987)

APPROXIMATE MEAN DECLINATION, 1964

SCALE 1:24 000

1 ½ 0 1 MILE

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

COLORADO

EXPLANATION OF GENERALIZED MINERAL AND ENERGY RESOURCE POTENTIAL

[See figures 8 through 12 for more detailed information on potentials for commodities 1 through 5, respectively. Those parts of the study area that are underlain by the Henson Member of the Silverton Volcanics have low potential for resources of gold and silver in clastic-sediment-hosted disseminated-type epithermal deposits, with certainty level B. Study area has low potential for resources of (1) alunite, with certainty level D, (2) uranium in disseminated deposits, with certainty level C, and (3) geothermal energy sources, with certainty level B. Study area has no potential for coal, oil, and natural gas, with certainty level D]

1,2 H/D,D 3,5 M/B,C — **Geologic terrane having (1) high potential for commodities 1 and 2, with certainty level D, and (2) moderate potential for commodities 3 and 5, with certainty levels B and C, respectively**

1,4,5 M/C,B,C — **Geologic terrane having moderate potential for commodities 1, 4, and 5, with certainty levels C, B, and C, respectively**

Commodities—Ag, silver; Au, gold; Pb, lead; Zn, zinc; Cu, copper; Mo, molybdenum; Sb, antimony; Bi, bismuth; Cd, cadmium; Mn, manganese; Hg, mercury; Se, selenium; Te, tellurium; W, tungsten

1 **Vein-type epithermal deposits (principally Ag, Au, Pb, Zn, and Cu, and minor Sb, barite, Bi, Cd, fluorspar, Mn, Hg, Se, Te, W)**

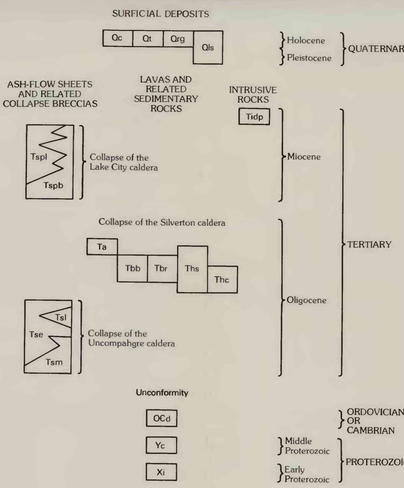
2 **Breccia-pipe-type epithermal deposits (principally Ag, Au, Pb, Zn, and Cu, and minor Sb, barite, Bi, Cd, fluorspar, Mn, Hg, Se, Te, W)**

3 **Volcanic-hosted disseminated-type epithermal deposits (Au, Ag)**

4 **Porphyry-type deposits (Mo and (or) Cu)**

5 **Vein uranium deposits**

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

[Descriptions of units are simplified from Lipman (1976a) and Hon (1987)]

HOLOCENE SURFICIAL DEPOSITS

Qc **Colluvium**

Qt **Talus deposits**

Qrg **Rock glacier**

HOLOCENE AND PLEISTOCENE SURFICIAL DEPOSITS

Qls **Landslide deposits**

MIOCENE INTRUSIVE ROCKS

Tidp **Dacite porphyry**—Small dike of dark-greenish-gray, porphyritic dacite on ridge southeast of Handies Peak. Contains 20–30 percent phenocrysts

MIOCENE ROCKS OF THE LAKE CITY CALDERA

Sunshine Peak Tuff—Compositionally zoned intracaldera ash-flow sheet and related caldera-collapse breccias

Tspl **Lower member**—Light-gray to medium-dark-gray, high-silica rhyolitic ash-flow tuff containing 20–30 percent phenocrysts

Tspb **Caldera-collapse breccia**—Chaotic large masses of precaldera rocks, mostly lavas and sediments of the Silverton Volcanics

OLIGOCENE ROCKS OF THE SAN JUAN CALDERA

Silverton Volcanics—Lava flows of intermediate to silicic composition and related volcaniclastic sedimentary rocks that accumulated within the San Juan caldera

Ta **Pyroxene andesite member**—Dark-gray, dense aphanitic andesite flows that largely overlie the Burns Member. Contains no phenocrysts or only sparse small phenocrysts of plagioclase and augite

Burns Member—Relatively silicic lava flows that interfinger with the Henson member

Tbb **Biotite dacite**—Light- to dark-gray thick flows and domes containing 15-30 percent phenocrysts

Tbr **Rhyolite**—Local flow of light-gray rhyolite containing less than 5 percent phenocrysts

Henson Member—Volcaniclastic sedimentary rocks that interfinger complexly with both the Burns Member and the pyroxene andesite member

Ths **Tuffaceous sandstone**—Green-gray, tuffaceous sandstone containing abundant grains of plagioclase, augite, and andesitic rock fragments

Thc **Mudflow breccia**—Dominantly monolithologic breccias containing clasts of pyroxene andesite in a sandy matrix

Sapinero Mesa Tuff—Rhyolitic ash-flow sheet, erupted from the San Juan and Uncompahgre calderas, and related caldera-collapse breccia

Tse **Eureka Member (intracaldera)**—Partly welded gray to densely welded red-brown tuff containing 5–10 percent phenocrysts

Tsl **Landslide breccia member**—Local lenses of landslide debris interlayered with upper part of Eureka Member

Tsm **Picayune Megabreccia Member**—Chaotic large masses of precaldera rocks, mostly intermediate-composition lavas, that underlie the Eureka Member and interfinger with its lower part

PREVOLCANIC ROCKS

OCd **Mafic dikes (Ordovician or Cambrian)**—Large dark-gray dikes as much as 150 ft thick that occupy generally northwest-trending fractures in the granite of Cataract Canyon

Yc **Granite of Cataract Canyon (Middle Proterozoic)**—Massive light-pink two-feldspar granite or monzogranite. Medium- to coarse-grained rock with local weak foliation or lineation

Xi **Irving Formation (Early Proterozoic)**—Large mass of gneiss and schist included within the granite of Cataract Canyon on northeast side of Whitecross Mountain

Geologic contact

Alteration contact

Unconformity along wall of Lake City caldera

Unconformity along wall of San Juan caldera

Fault—Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

Quartz vein along fault

Hydrothermally altered rocks

Limonite-stained rock

Bleached rock

Mine workings

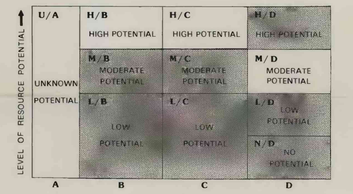
Adit

Caved adit

Shaft

Trench

Drill hole



LEVELS OF RESOURCE POTENTIAL

H High mineral resource potential

M Moderate mineral resource potential

L Low mineral resource potential

U Unknown mineral resource potential

N No known mineral resource potential

LEVELS OF CERTAINTY

A Available data not adequate

B Data indicate geologic environment and suggest level of resource potential

C Data indicate geologic environment, give good indication of level of resource potential, but do not establish activity of resource forming processes

D Data clearly define geologic environment and level of resource potential and indicate activity of resource forming processes in all or part of the area

Diagram showing relationships between levels of mineral resource potential and levels of certainty. Shading shows levels that apply to this study area

MAP SHOWING GENERALIZED MINERAL RESOURCE POTENTIAL, MINES, AND PROSPECTS, AND GEOLOGY, ALTERATION, AND VEINS OF THE HANDIES PEAK WILDERNESS STUDY AREA, HINSDALE COUNTY, COLORADO